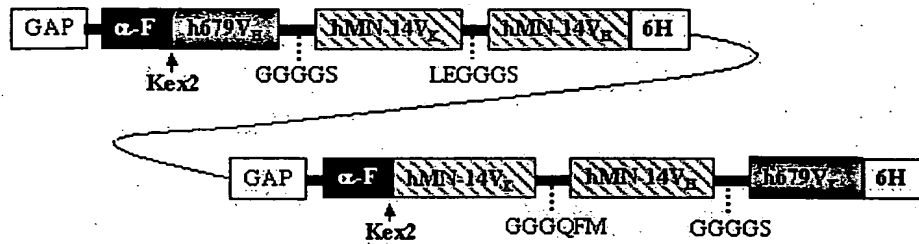


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A.



B.



C.

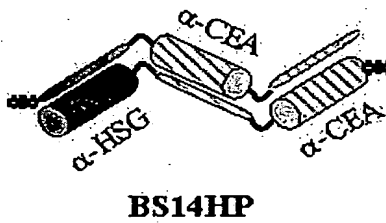


Figure 1

FIGURE 1D

1) Amino acid sequence of Polypeptide 1. EAEAEFM-h679VH-GGGGS-hMN-14VK-
LEGGGS-hMN-14VH-VD6His.

EAEAEFMEVQ LVESGGDLVK PGGSLKLSCA ASGFTFSIYT MSWLRQTPGK
CDR1h679VH

GLEWVATLSG DGDDIYYPDS VKGRFTISRD NAKNSLYLQM NSLRAEDTAL
CDR2h679VH

YYCARVRLGD WDFDVWGQGT TVSVSSGGGG SDIQLTQSPS SLSASVGDRV
CDR3h679VH linker

TITCKASQDV GTSVAWYQQK PGKAPKLLIY WTSTRHTGVP SRFSGSGSGT
CDR1hMN14VK CDR2hMN14VK

DFTFTISLQ PEDIATYYCQ OYSLYRSFGQ GTKVEIKRLE GGGSEVQLVE
CDR3hMN14VK linker

SGGGVVQPGR SLRLSCSASG FDFTTYWMSW VRQAPGKGLE WIGEIHPDSS
CDR1hMN14VH CDR2hMN14VH

TINYAPSLKD RFTISRDN AKNTLFLQMDSL RPEDTGVYFC ASLYFGFPWF
CDR2hMN14VH CDR3hMN14VH

AYWGQGTPVTVSVDHHHHHH
CDR3hMN14VH 6His

Nucleic acid sequence (cDNA) of BS14HP polypeptide 1

GAGGCTGAAG	CTGAATTCAT	GGAAGTGCAG	CTGGTGGAGT	CAGGGGGAGA
CTTAGTGAAG	CCTGGAGGGT	CCCTGAAACT	CTCCTGTGCA	GCCTCTGGAT
TCACCTTCAG	TATTTACACC	ATGTCTTGGC	TTCGCCAGAC	TCCGGGAAAG
GGGCTGGAGT	GGGTCGCAAC	CCTGAGTGGT	GATGGTGATG	ACATCTACTA
TCCAGACAGT	GTGAAGGGTC	GATTCACCAT	CTCCAGAGAC	AATGCCAAGA
ACAGCCTATA	TCTGCAGATG	AACAGTCTAA	GGGCTGAGGA	CACGGCCTTG
TATTACTGTG	CAAGGGTGCG	ACTTGGGGAC	TGGGACTTCG	ATGTCTGGGG
CCAAGGGACC	ACGGTCTCCG	TCTCCTCAGG	AGGTGGCGGA	TCCGACATCC
AGCTGACCCA	GAGCCCAAGC	AGCCTGAGCG	CCAGCGTGGG	TGACAGAGTG
ACCATCACCT	GTAAGGCCAG	TCAGGATGTG	GGTACTTCTG	TAGCTTG GTA
CCAGCAGAAG	CCAGGTAAGG	CTCCAAAGCT	GCTGATCTAC	TGGACATCCA
CCCGGCACAC	TGGTGTGCCA	AGCAGATTCA	GCGGTAGCGG	TAGCGGTACC
GACTTCACCT	TCACCATCAG	CAGCCTCCAG	CCAGAGGACA	TCGCCACCTA
CTACTGCCAG	CAATATAGCC	TCTATCGGTC	GTTTCGGCAA	GGGACCAAGG
TGGAAATCAA	ACGTCTCGAG	GGCGGAGGTA	GCGAGGTCCA	ACTGGTGGAG
AGCGGTGGAG	GTGTTGTGCA	ACCTGGCCGG	TCCCTGCGCC	TGTCCTGCTC
CGCATCTGGC	TTCGATTTCA	CCACATATTG	GATGAGTTGG	GTGAGACAGG
CACCTGGAAA	AGGTCTTGAG	TGGATTGGAG	AAATTCATCC	AGATAGCAGT

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ACGATTAACT ATGCGCCGTC TCTAAAGGAT AGATTTACAA TATCGCGAGA
CAACGCCAAG AACACATTGT TCCTGCAAAT GGACAGCCTG AGACCCGAAG
ACACCGGGGT CTATTTTGT GCAAGCCTT ACTTCGGCTT CCCCTGGTTT
GCTTATTGGG GCCAAGGGAC CCCGGTCACC GTCTCCGTCG ACCATCATCA
TCATCATCAT

FIGURE 1E

3) Amino acid sequence of polypeptide 2. EAEAEF-hMN-14VK-GGGQFM-hMN-14VH-GGGGS-h679VK-LD6His.

EAEAEFDIQL TQSPSSLSAS VGDRVTTITCK ASQDVGTSVA WYQQKPGKAP
CDR1hMN14VK

KLLIYWTSR HTGVPSRFSG SGSGTDFTFT ISSLQPEDIA TYYCQQYSLY
CDR2hMN14VK CDR3hMN14VK

RSFGQGTKVE IKRGGGQFME VQLVESGGGV VQPGRSLRLS CSASGFDFTT
CDR3hMN14VK linker CDR1hMN14VH

YWMSWVRQAP GKGLEWIGEI HPDSSTINYA PSLKDRFTIS RDNAKNTLFL
CDR1hMN14VH CDR2hMN14VH

QMDSLRPEDT GVFYFCASLYF GFPWFAYWGQ GTPVTVSGGG GSDIVMTQSP
CDR3hMN14VH linker

SSLAVSPGER VTLTCKSSQS LFNSRTRKNY LGWYQQKPGQ SPKLLIYWAST
CDR1h679VK CDR2h679VK

RESGVPDRFS GSGSGTDFTL TINSLQAEDV AVYYCTQVYY LCTFGAGTKLE
CDR2h679VK CDR3h679VK

LKRLDHHHHH H
6His

Nucleic acid sequence (cDNA) of BS14HP polypeptide 2

GAGGCTGAAG	CTGAATTCGA	CATCCAGCTG	ACCCAGAGCC	CAAGCAGCCT
GAGCGCCAGC	GTGGGTGACA	GAGTGACCAT	CACCTGTAAG	GCCAGTCAGG
ATGTGGGTAC	TTCTGTAGCT	TGGTACCAGC	AGAAGCCAGG	TAAGGCTCCA
AAGCTGCTGA	TCTACTGGAC	ATCCACCCGG	CACACTGGTG	TGCCAAGCAG
ATTCAGCGGT	AGCGGTAGCG	GTACCGACTT	CACCTTCACC	ATCAGCAGCC
TCCAGCCAGA	GGACATCGCC	ACCTACTACT	GCCAGCAATA	TAGCCTCTAT
CGGTCGTTTC	GCCAAGGGAC	CAAGGTGGAA	ATCAAACGTG	GAGGTGGCCA
ATTCATGGAG	GTCCAACCTG	TGGAGAGCGG	TGGAGGTGTT	GTGCAACCTG
GCCGGTCCCT	GCGCCTGTCC	TGCTCCGCAT	CTGGCTTCGA	TTTCACCACA
TATTGGATGA	GTTGGGTGAG	ACAGGCACCT	GGAAAAGGTC	TTGAGTGGAT
TGGAGAAATT	CATCCAGATA	GCAGTACGAT	TAACATATGCG	CCGTCTCTAA
AGGATAGATT	TACAATATCG	CGAGACAACG	CCAAGAACAC	ATTGTTCTTG
CAAATGGACA	GCCTGAGACC	CGAAGACACC	GGGGTCTATT	TTTGTGCAAG
CCTTTACTTC	GGCTTCCCCT	GGTTTGCTTA	TTGGGGCCAA	GGGACCCCGG
TCACCGTCTC	CGGAGGCGGT	GGATCCGACA	TTGTGATGAC	ACAATCTCCA

TCCTCCCTGG CTGTGTCACC CGGGGAGAGG GTCACTCTGA CCTGCAAATC
CAGTCAGAGT CTGTTCAACA GTAGAACCCG AAAGAACTAC TTGGGTGGT
ACCAGCAGAA ACCAGGGCAG TCTCCTAAAC TTCTGATCTA CTGGGCATCT
ACTCGGGAAT CTGGGGTCCC TGATCGCTTC TCAGGCAGTG GATCCGGAAC
AGATTTCACT CTCACCATCA ACAGTCTGCA GGCTGAAGAC GTGGCAGTTT
ATTACTGCAC TCAAGTTTAT TATCTGTGCA CGTTCGGTGC TGGGACCAAG
CTGGAGCTGA AACGGCTCGA CCATCATCAT CATCATCAT

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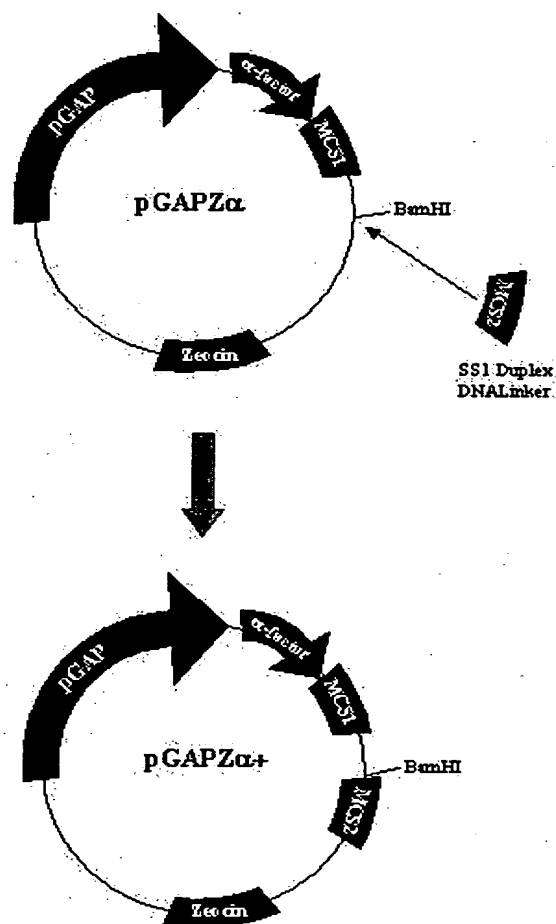


Figure 2

BIACore analysis of BS14HP

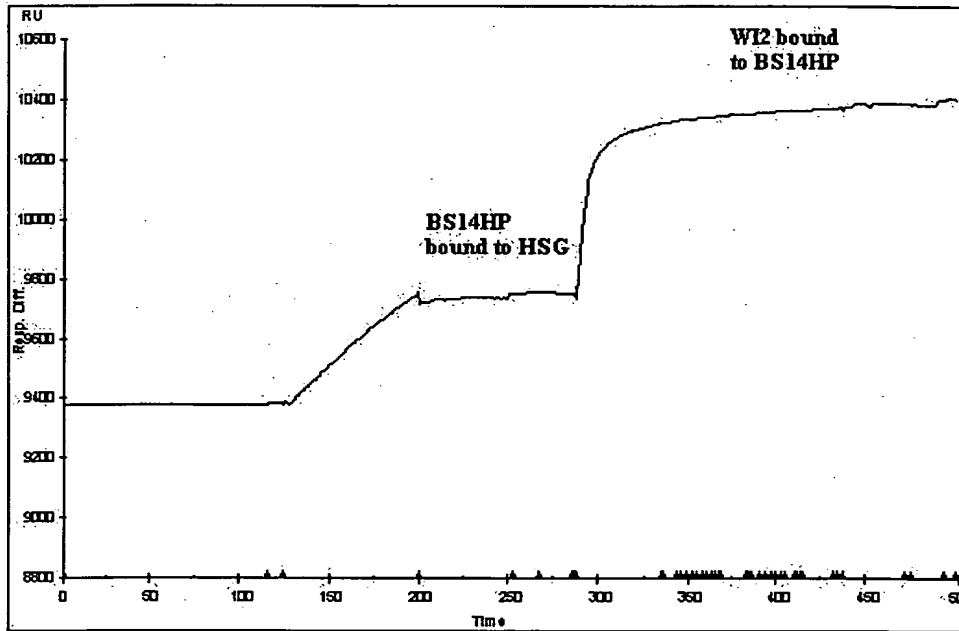


Figure 3

SDS-PAGE Analysis of BS14HP
B/N 111802

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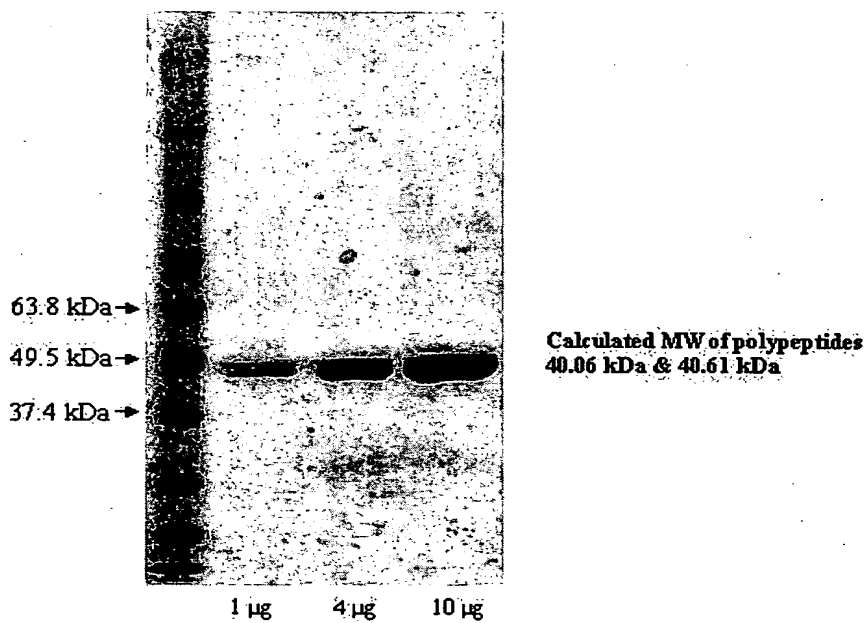


Figure 4

Size exclusion HPLC analysis

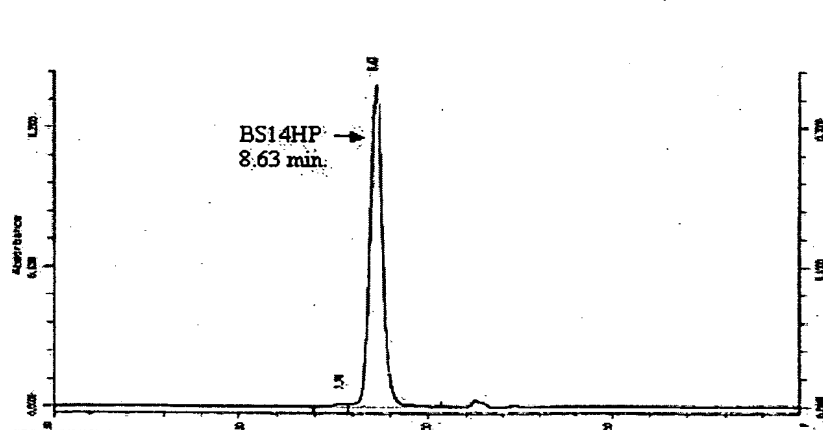
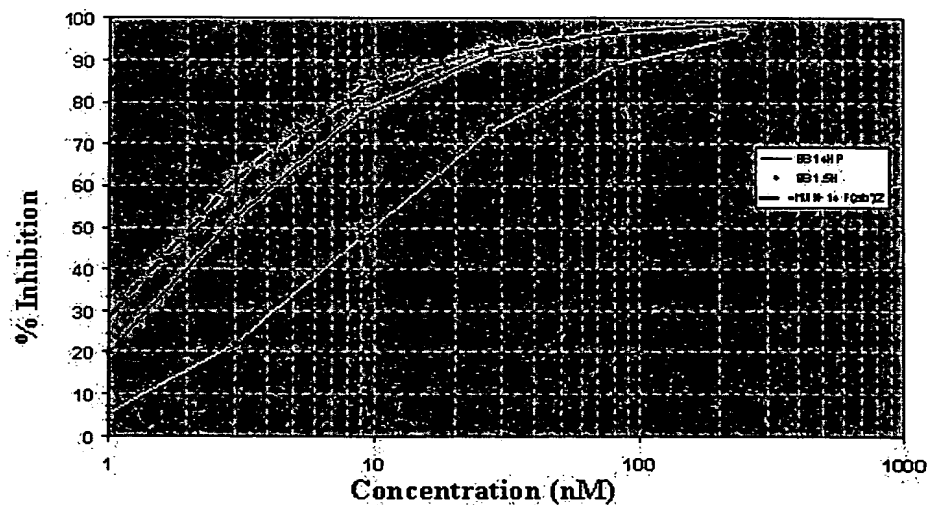


Figure 5

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Competitive ELISA assay for CEA binding



	IC ₅₀
BS14HP	2.7 nM
hMN-14 F(ab') ₂	2.0 nM
BS1.5H	10.0 nM

Figure 6

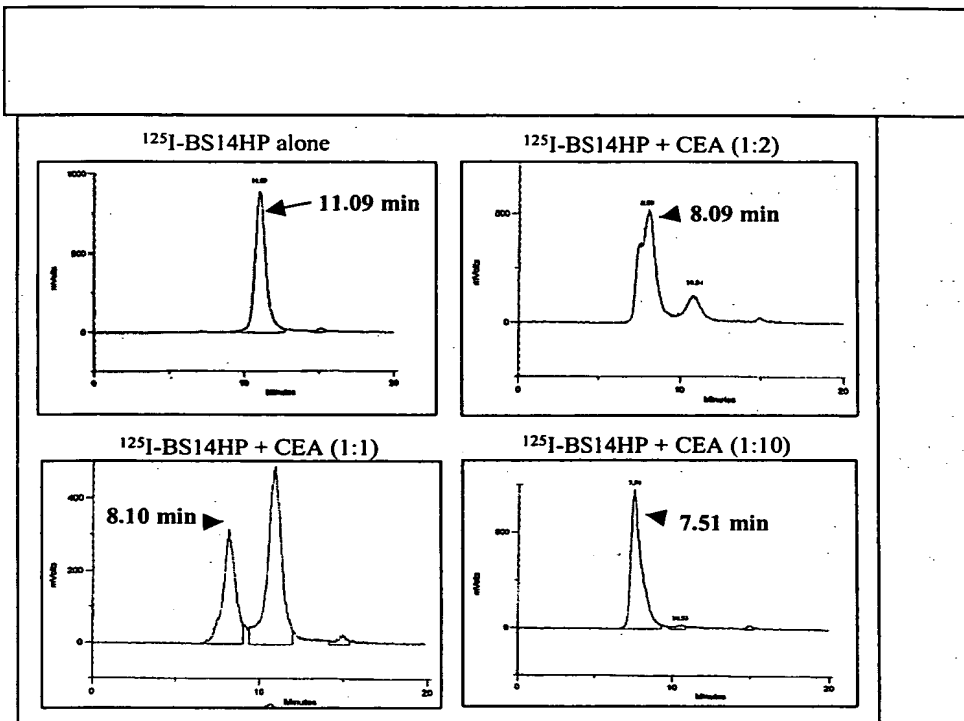


Figure 6B SE-HPLC Analysis of BS14HP immunoreactivity with CEA

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Tumor retention and blood clearance
of ^{125}I BS14HP

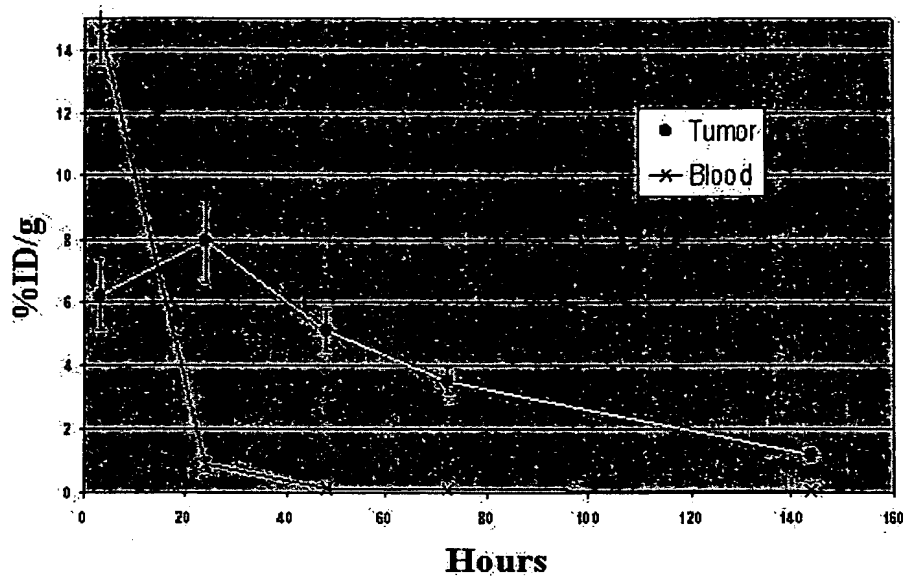
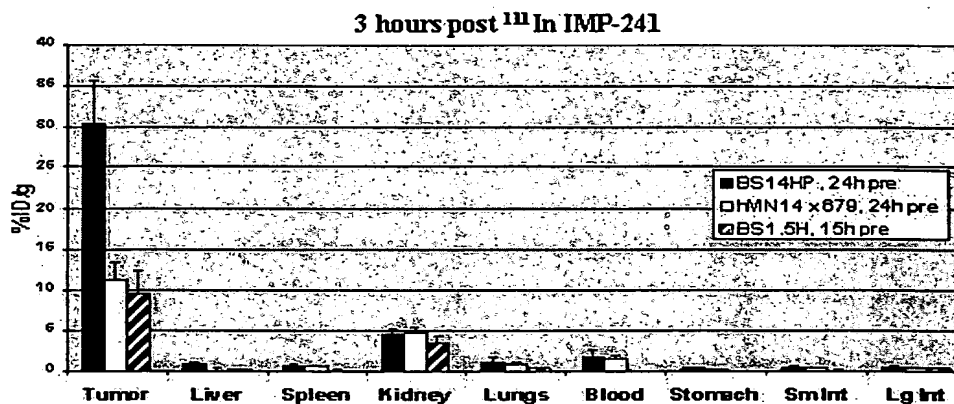


Figure 7

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A. Biodistribution of ^{111}In -IMP241 in mice pretargeted with BS14HP, BS1.5H or hMN14 x 679 Fab' x Fab'



B. Tumor/non-tumor ratios of ^{111}In -IMP241 in mice pretargeted with BS14HP, BS1.5H or hMN-14 x 679 Fab' x Fab'

	BS14HP	hMN-14 x 679	BS1.5H
Liver	36.19 (± 18.8)	22.20 (± 6.3)	120.00 (± 36.0)
Spleen	57.39 (± 46.0)	27.80 (± 5.9)	181.00 (± 58.0)
Kidney	6.70 (± 0.7)	2.50 (± 0.5)	2.98 (1.1 \pm)
Lungs	29.94 (± 15.6)	14.10 (± 2.8)	48.60 (± 19.3)
Blood	20.32 (± 34.7)	8.10 (± 2.1)	284.00 (± 50.6)
Stomach	123.12 (± 242.0)	103.00 (± 15.2)	530.00 (± 291.7)
Sm. Intestine	78.95 (± 55.0)	53.40 (± 14.4)	235.00 (± 138.7)
Lg. Intestine	80.94 (± 26.7)	37.40 (± 9.2)	61.20 (± 33.2)

Figure 8

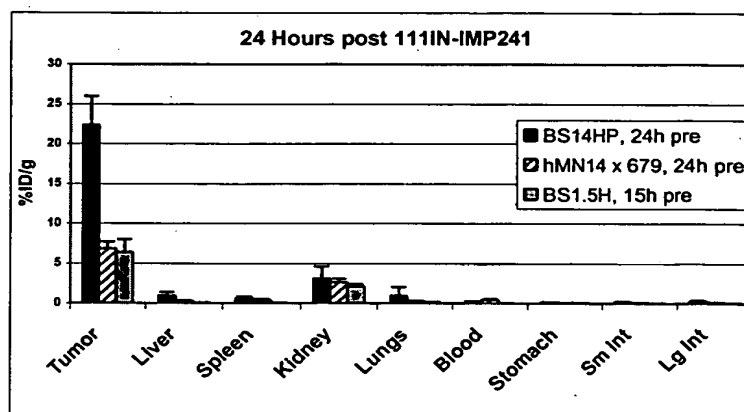


Figure 8C

IMP 281

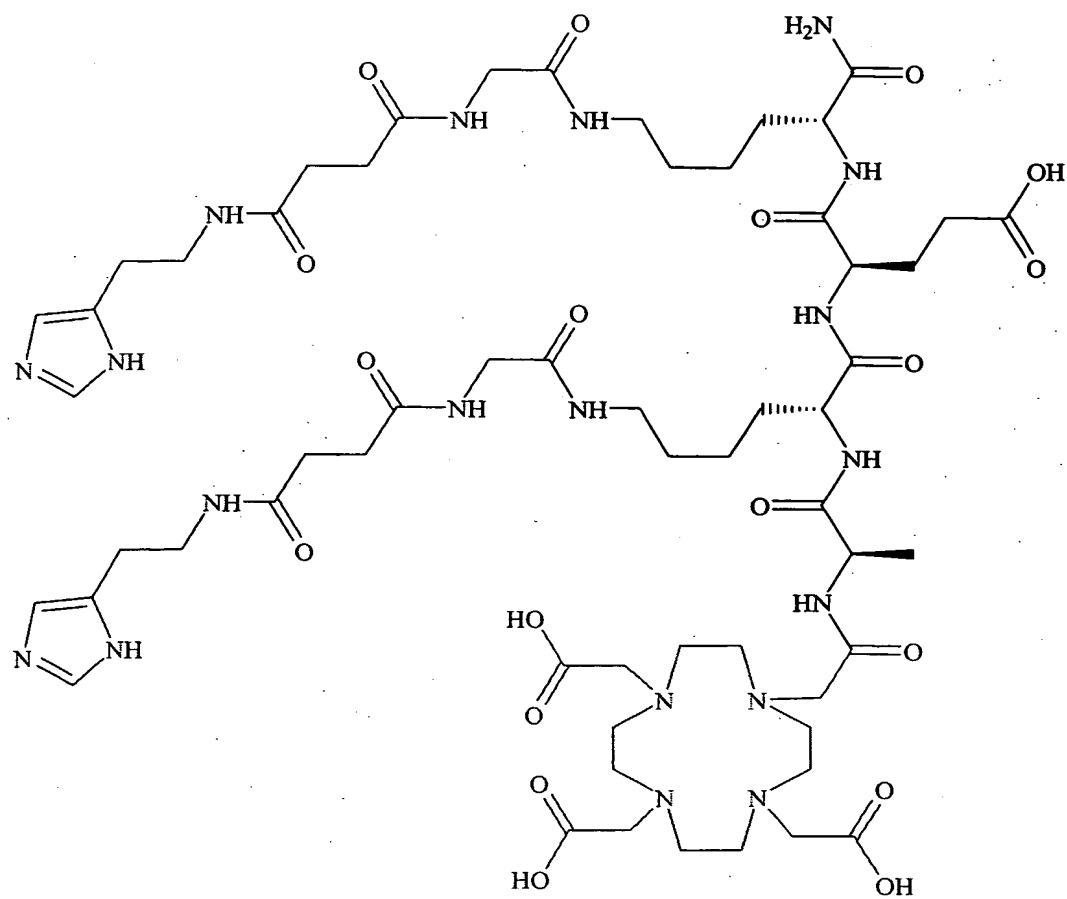


Figure 9A

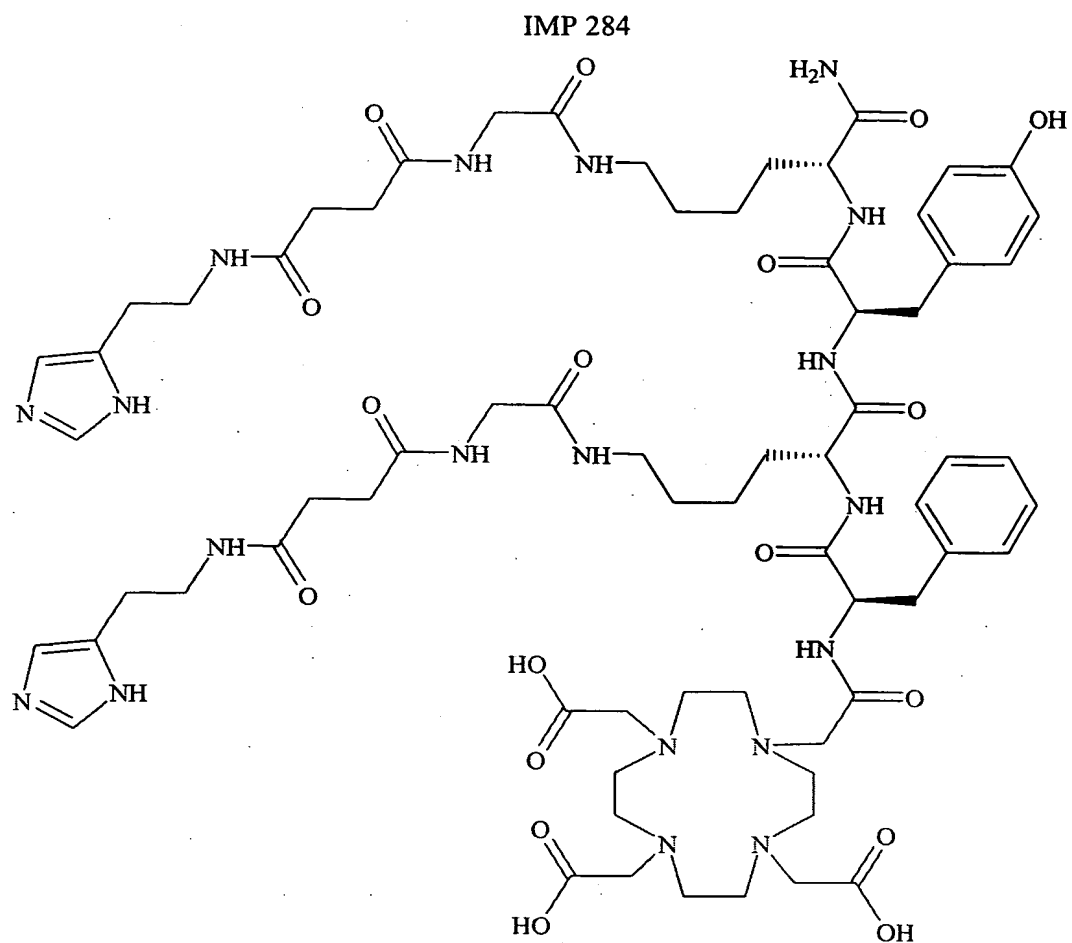


Figure 9B

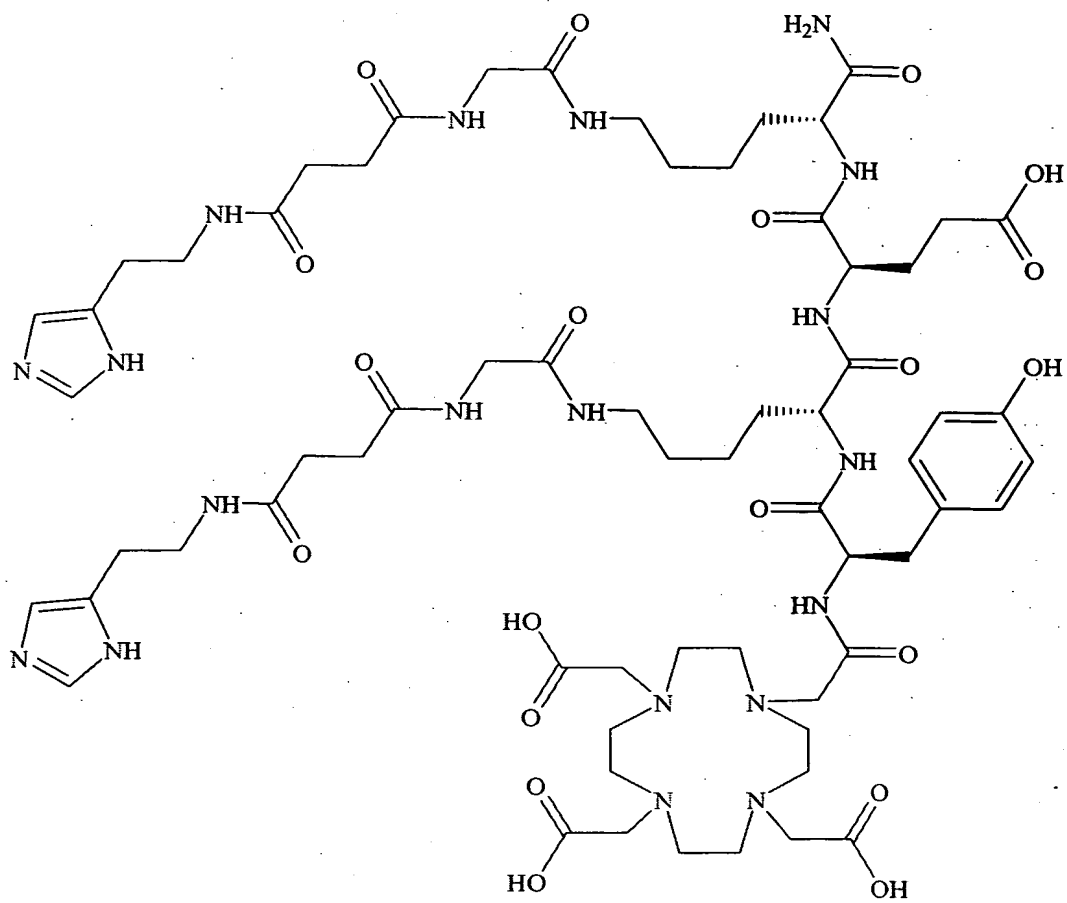


Figure 9C

Functional features of the SV3 shuttle vector.

HindIII—XhoI—XbaI—Leader peptide—NcoI—SalI—6His—Stop—Stop—BglII—EagI—EcoRI

Figure 10 A

Features of the ORF/Polypeptide 1, and ORF/Polypeptide 2

ORF1/Polypeptide 1	
Ldr Pep—h679V _H —GGGGS—hMN-14V _K —LEGGGS—hMN-14V _H —HHHHHH	
ORF2/Polypeptide 2	
Ldr Pep—hMN-14V _K —GGGQFM—hMN-14V _H —GGGGS—h679V _K —HHHHHH	

Figure 10B

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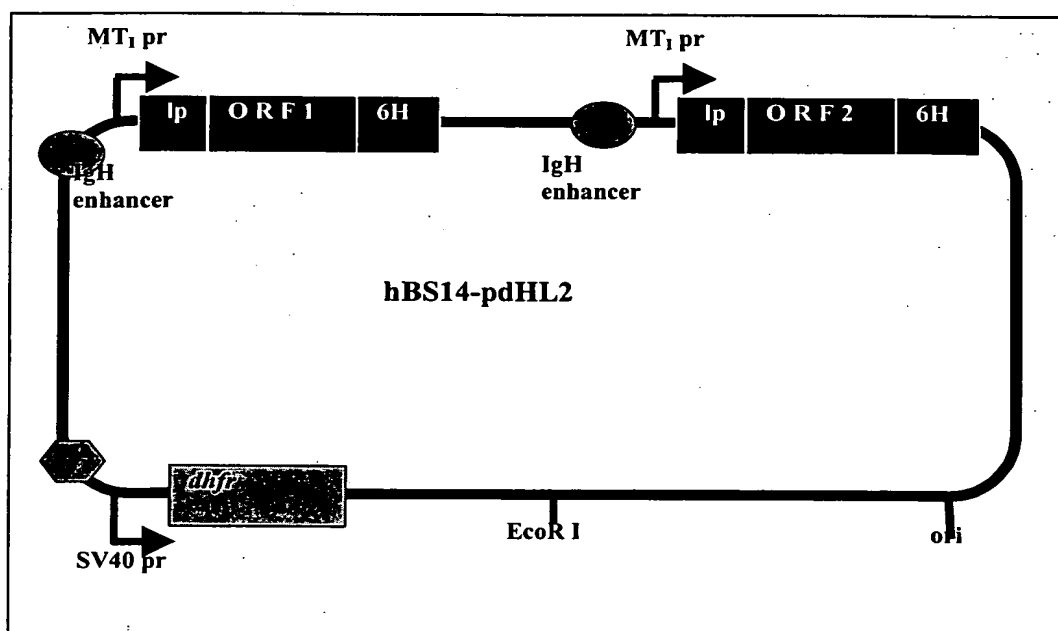


Figure 11. Schematic representation of hBS14-pDHL2 expression vector.

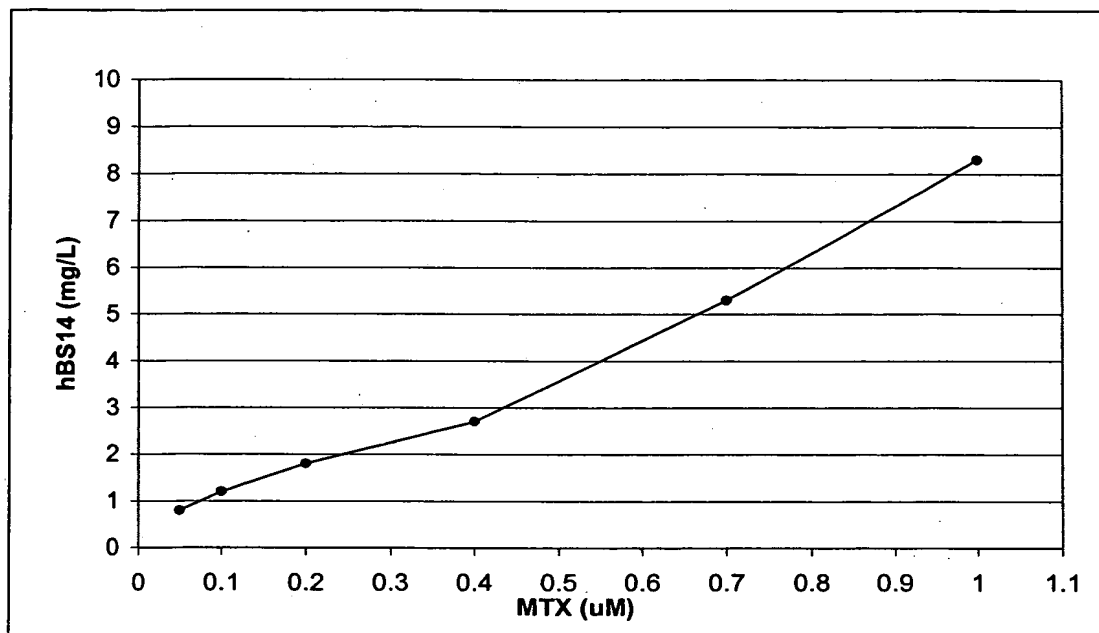
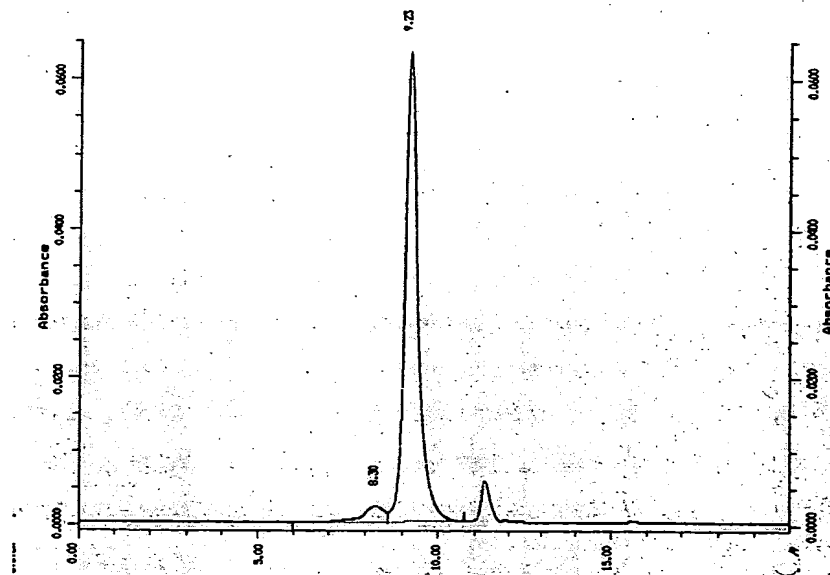


Figure 12. MTX amplification of hBS14 SP2/0 clone 1H6

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hBS14 102003
YB2/0



hBS14 100103
SP2/0

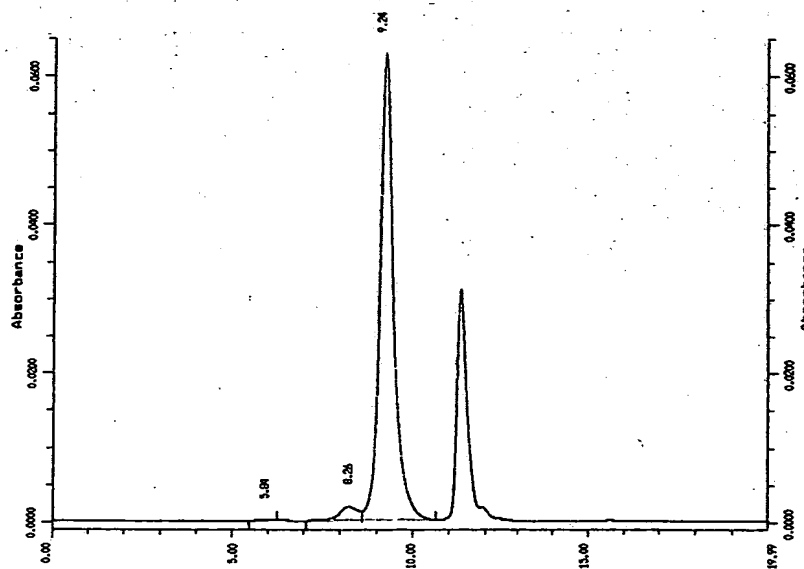


Figure 13. SE-HPLC analysis of purified hBS14

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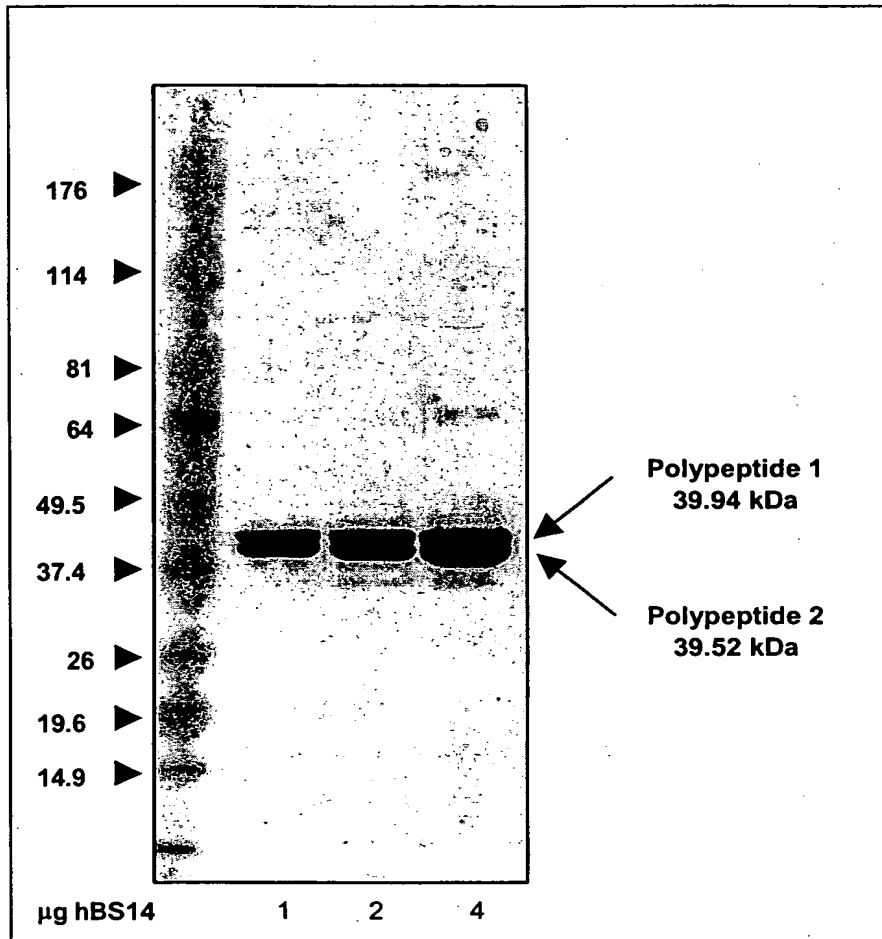


Figure 14. SDS-PAGE analysis of purified hBS14

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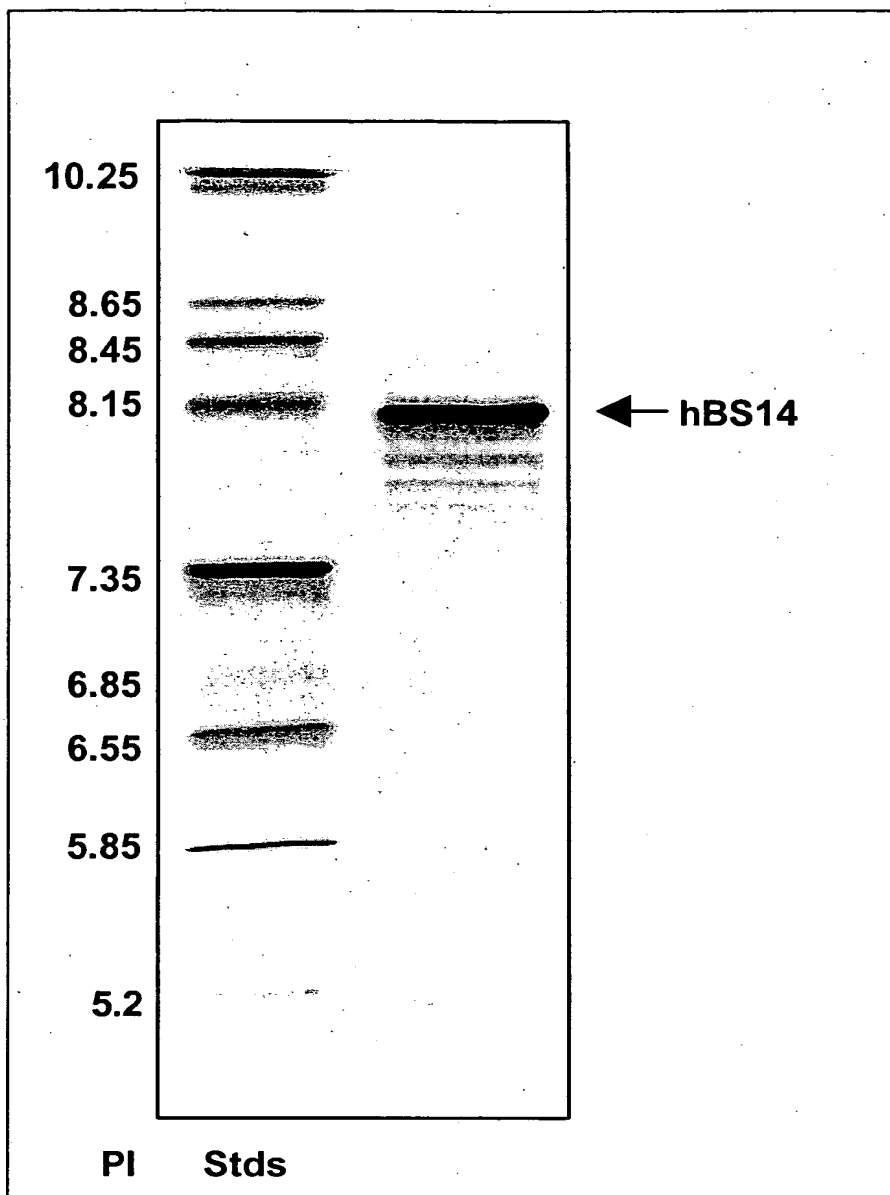


Figure 15. IEF analysis of purified hBS14

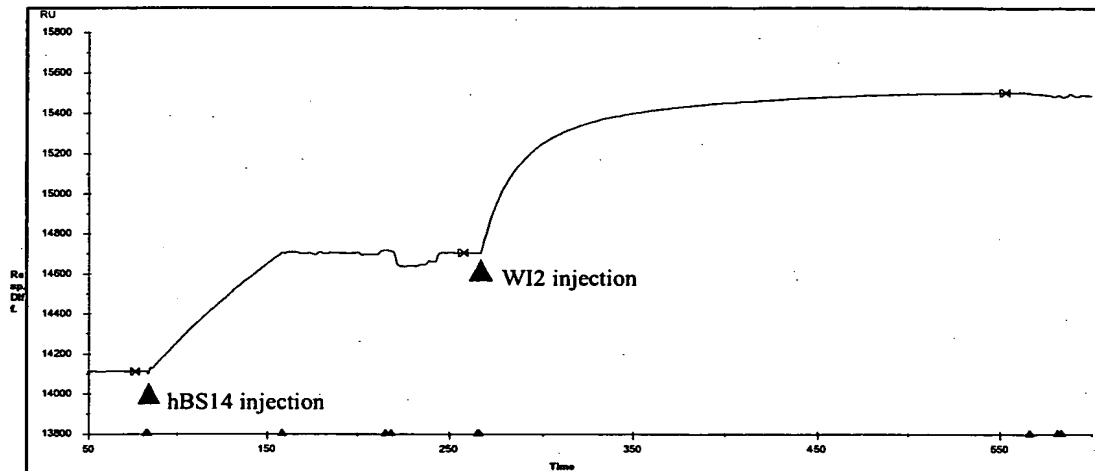


Figure 16. BIAcore analysis of hBS14

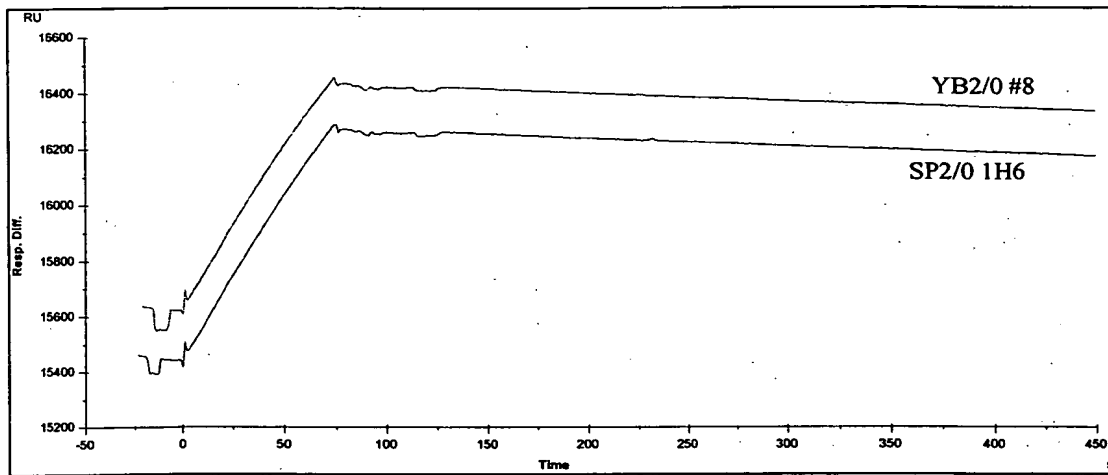


Figure 17. BIAcore analysis of HSG binding of hBS14 produced in either SP2/0 or YB2/0 cells

Figure 18

IMP 291 Ac-Lys(HSG-iAsp-)-Cys-NH₂ MH⁺ 656

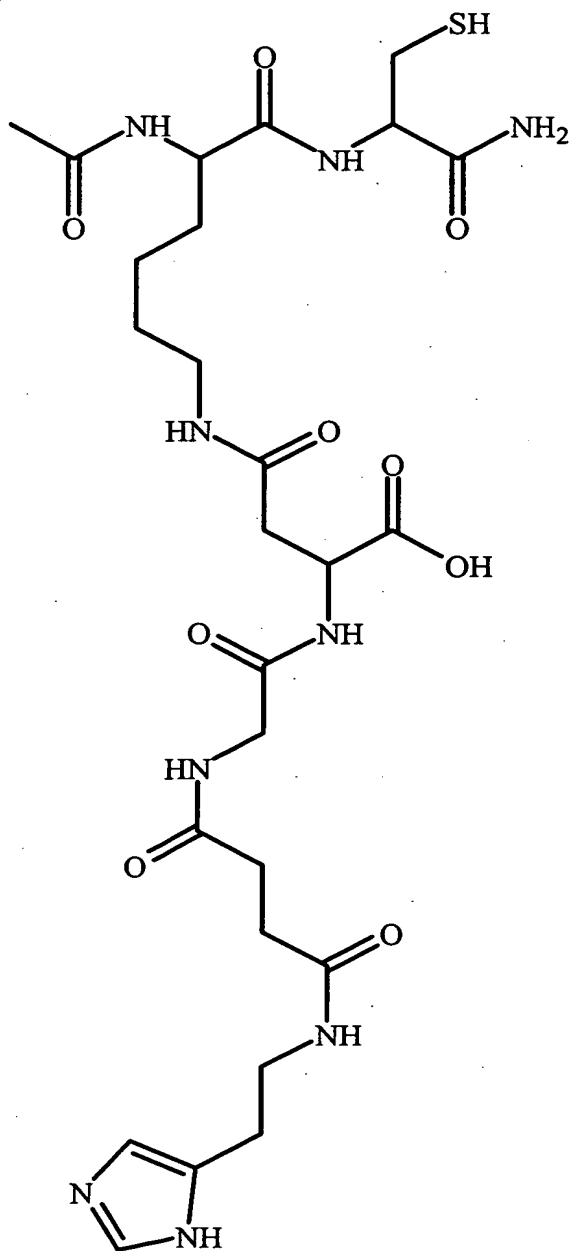


Figure 19

IMP 245 DOTA-Phe-Lys(HSG)-D-Tyr-Lys(HSG)-Lys(Tscg-Cys-)-NH₂ MH⁺ 1832

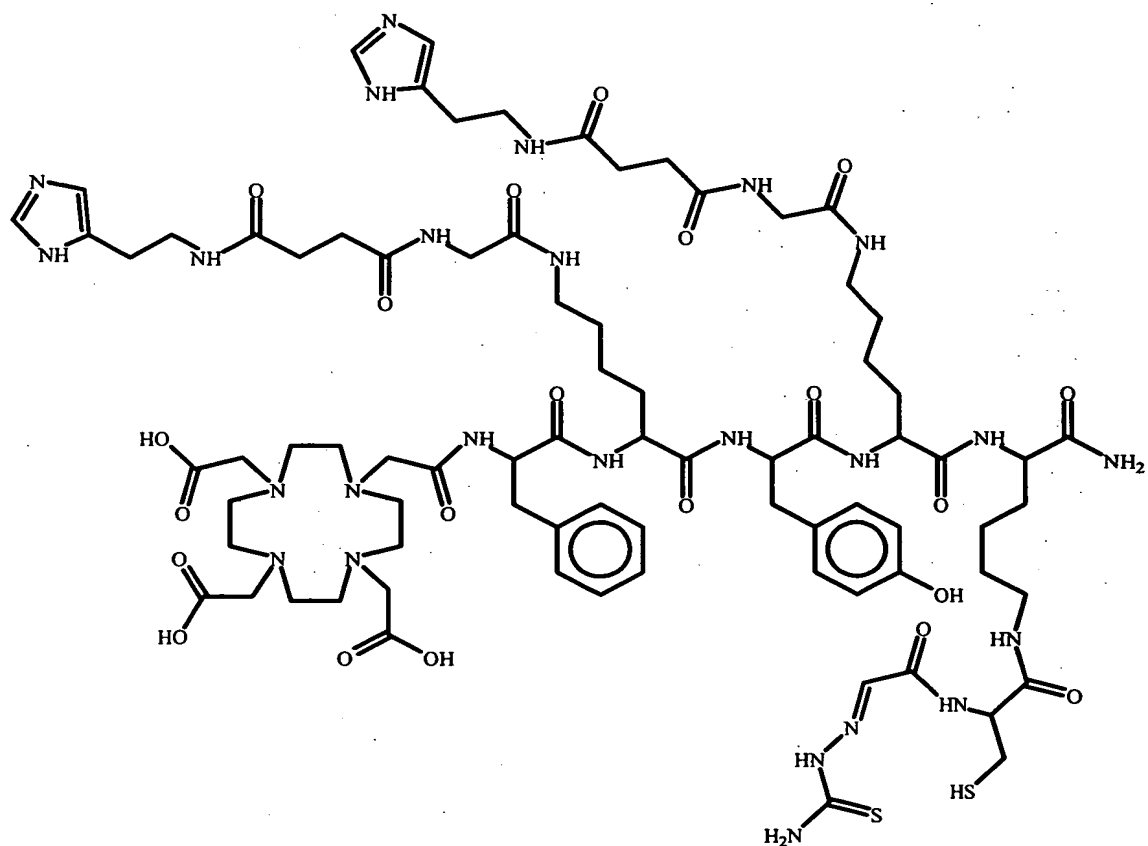
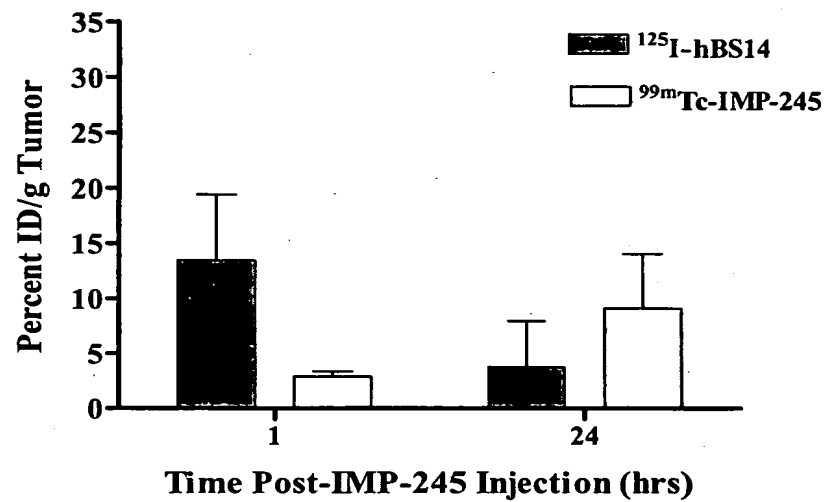


Figure 20

**Pre-Targeting of ^{99m}Tc -IMP-245 by hBS14 (4 hr)
in GW-39 Tumor-Bearing Mice**



**Pre-Targeting of ^{99m}Tc -IMP-245 by hBS14 (24 hr)
in GW-39 Tumor-Bearing Mice**

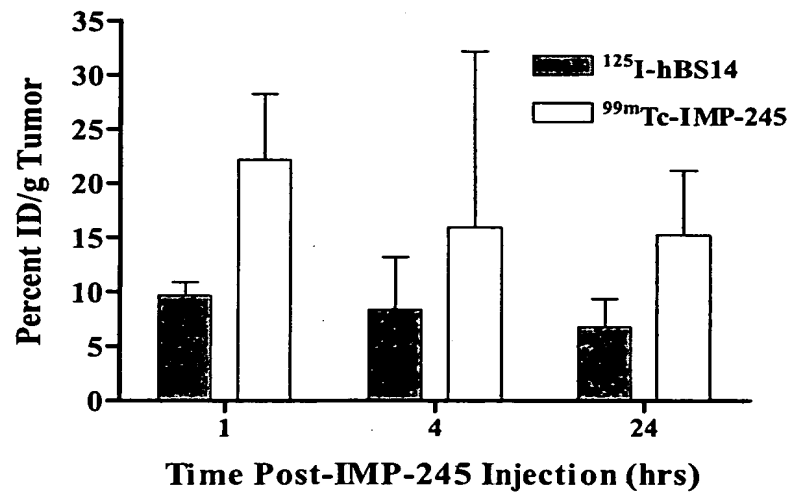
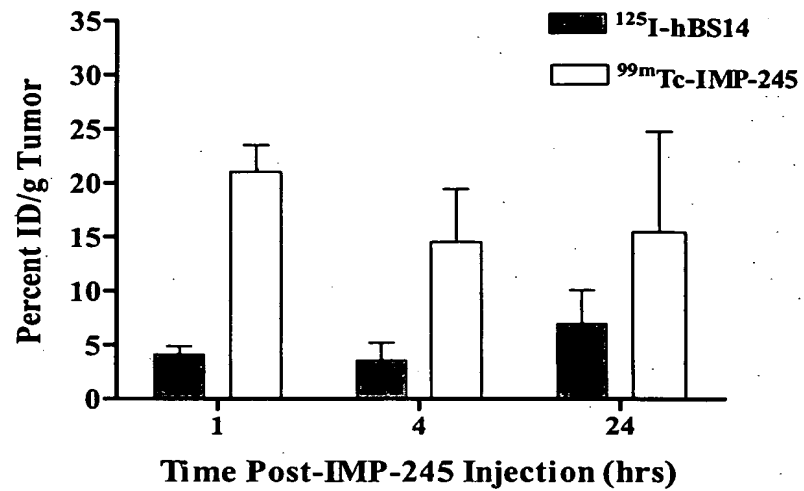
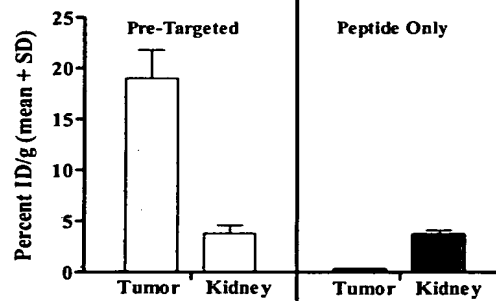


Figure 21

**Pre-Targeting of ^{99m}Tc -IMP-245 by hBS14 (48 hr)
in GW-39 Tumor-Bearing Mice**



**^{99m}Tc -IMP-245 Uptake in Imaged Mice
at 24 hr Post-Injection**



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Figure 22

Percent ID/g and Tumor Non-Tumor Ratios of ^{99m} Tc-IMP-245 at 1 hr Post-Injection.						
4 hrs hBS14 Clearance			24 hrs hBS14 Clearance		48 hr hBS14 Clearance	
Tissue	%ID/g \pm (SD)	T:NT Ratio \pm (SD)	%ID/g \pm (SD)	T:NT Ratio \pm (SD)	%ID/g \pm (SD)	T:NT Ratio \pm (SD)
GW-39	2.9 \pm 0.5	—	22.2 \pm 6.1	—	21.0 \pm 2.5	—
Liver	8.3 \pm 0.6	0.4 \pm 0.07	1.5 \pm 0.8	17.5 \pm 6.5	1.1 \pm 0.2	19.7 \pm 3.6
Spleen	7.5 \pm 1.9	0.4 \pm 0.08	0.9 \pm 0.3	27.7 \pm 9.4	0.5 \pm 0.1	41.3 \pm 9.7
Kidney	13.4 \pm 1.1	0.2 \pm 0.03	5.3 \pm 0.8	4.1 \pm 0.7	7.9 \pm 0.8	2.7 \pm 0.5
Lungs	10.7 \pm 3.1	0.3 \pm 0.10	1.7 \pm 0.7	14.1 \pm 4.8	1.0 \pm 0.4	23.0 \pm 6.8
Blood	36.9 \pm 6.4	0.1 \pm 0.01	7.1 \pm 8.7	5.7 \pm 3.4	1.6 \pm 0.3	13.6 \pm 2.3
Stomach	1.3 \pm 0.4	2.4 \pm 0.67	4.0 \pm 7.6	29.4 \pm 18.8	3.5 \pm 0.9	6.4 \pm 2.0
Small Int.	3.7 \pm 0.3	0.8 \pm 0.07	3.9 \pm 5.3	11.8 \pm 6.4	2.4 \pm 0.5	8.8 \pm 1.5
Large Int.	2.2 \pm 1.7	1.8 \pm 0.98	0.4 \pm 0.2	69.4 \pm 31.2	0.4 \pm 0.1	56.0 \pm 11.5
Muscle	1.2 \pm 0.2	2.4 \pm 0.32	4.8 \pm 6.4	19.1 \pm 26.3	4.1 \pm 5.0	18.4 \pm 25.6
Tumor Weight (grams)	0.309 \pm 0.139		0.309 \pm 0.136		0.972 \pm 0.640	

Figure 23

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